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FOOD CHOICES AND NUTRITIONAL ACHIEVEMENT OF NORTH CAROLINA HOUSEHOLDS

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DIVISION OF HEALTH SERVICES

ADMINISTRATIVE SERVICES SECTION
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This report is the second in a series of treatises describing the food choices of North Carolinians as represented by the North Carolina Nutrition Survey conducted during the Spring of 1970. This is a statistical report prepared for the use of the Nutrition Branch of the Division of Health Services. Any opinions stated herein are those of the author and do not necessarily reflect positions of nutritionists or officials of the Division of Health Services.

ABSTRACT

This report examines dietary differences among North Carolina households representing varying levels of nutritional achievement. Wide variation was found in the kinds and amounts of food consumed and in the corresponding nutrient intakes of different households.

Differences in the eating pattern characteristics of household members were observed. The incidence of skipped meals and the reported absence of snacks increased progressively as nutritional achievement declined.

Compared to diets which met prescribed dietary standards, diets which were rated inadequate were considerably less abundant in dairy products and fruits and vegetables. Beef and pork were less abundant. On the other hand, fish and shellfish and soups and sauces were more abundant in the inadequate diets.

Although survey findings show that low protein intakes were relatively infrequent, animal protein was found to be considerably less abundant in diets which were rated inadequate than in diets which met prescribed standards.

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I. INTRODUCTION

The North Carolina Nutrition Survey was conducted by the State Board of Health during the Spring of 1970. Details of the survey design and methods have been reported in previous publications (1, 2). Highlights of the survey findings and qualifications of the data are given in a recent monograph describing the food choices of the general household population of North Carolina (3).

The present report examines meal pattern characteristics and the food choices of households at different levels of nutritional achievement. For each of 21 food groups, estimates of the frequency of use, the quantity consumed and the nutrient values of the intakes are given. In addition to the nutrients studied in the initial report of the survey (1), the present report includes data for the vitamins thiamine, riboflavin and preformed niacine.

II. DEFINITIONS AND EXPLANATIONS

Quality of Diet Rating

On the basis of the percents of standard calculated for five nutrients, a diet has been rated according to the following criteria:

Optimal: Met North Carolina Nutrition Survey standard for 5 nutrients.

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Quality of Diet Rating

On the basis of the percents of standard calculated for five nutrients, a diet has been rated according to the following criteria:

Optimal - Met North Carolina Nutrition Survey standard for 5 nutrients.

Adequate: Met at least half of the North Carolina Nutrition Survey standard for 5 nutrients but less than North Carolina Nutrition Survey standard for 1 or more nutrients.

Inadequate: Met less than half of the North Carolina Nutrition Survey standard for 1 or more nutrients.

Details concerning the nutrients studied and the reference standards utilized are included in the initial report of the survey (1).

Food Groups

The food groups of this report were selected by nutritionists of the State Board of Health as being the most meaningful possible groupings for nutritional analysis. The food group data are detailed in Tables 2-5 (Section IV). Table 2 shows frequencies and mean intakes for the total household population of North Carolina. Table 3 details the data for optimal-diet households, Table 4 for adequate-diet households, Table 5 for inadequate-diet households. In the tables, the food group names are abbreviated such that names are restricted to 15 characters or less. A list of the full group names follows. The report "Food Choices of North Carolinians" (3) describes in detail the foods included in each food group.

Food Group	Abbreviated Title
Dairy Products	Dairy Prod
Beef	Beef
Pork	Pork
Veal and Lamb	Veal & Lam
Sausage and Luncheon Meat	Sausage
Fish and Shellfish	Fish&Shell
Poultry	Poultry
Eggs	Eggs
Legumes and Nuts	Legumes

Adequate:	Met at least half of the North Carolina Nutrition Survey standard for 5 nutrients but less than North Carolina Nutrition Survey standard for 1 or more nutrients.
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Fish and Shellfish	Fish&Shell
Poultry	Poultry
Eggs	Eggs
Legumes and Nuts	Legumes

Citrus Fruits and Tomatoes	Frt&Tomat
High A Fruits and Vegetables	Hi A F&V
White Potatoes	Potatoes
Other Fruits and Vegetables	Oth Fr&Veg
Flour and Cereal Products	Flour Cere
Self-rising Flour	S-R Flour
Desserts	Desserts
Sugar and Sweets	Sweets
Fats, Oils and Cream	Fats
Mixed Foods	Mixed Food
Soups and Sauces	Soup&Sauce
Condiments and Other Food	Condiments

Frequency of Food Selections

The average weekly frequency of selecting foods results from dividing the total number of recorded uses of foods in the food group by the number of households in the diet class and multiplying the quotient by seven. While this procedure allows for meaningful interpretation and comparison of the frequencies, it should be noted that food records were actually taken only for diets on week days, Monday through Friday. Since week-end eating habits may be atypical, the weekly frequencies should not be taken at face value.

Quantities of Food

In a previous report, quantities of foods consumed from the home food supply were expressed as averages per person per day (3). Comparisons between population subgroups were not included.

In the present effort, in which quantities of food consumed by different population groups are examined, variations in the meal patterns of household members must be considered in order to measure actual abundance. Otherwise, quantity differentials between population groups may reflect only

Citrus Fruits and Tomatoes	Fruitcake
High A Fruits and Vegetables	Jet a ray
White Potatoes	Potatoes
Other Fruits and Vegetables	Oth Fruits
Flour and Cereal Products	Flour Cere
Self-rising Flour	S-R Flour
Dessert	Dessert
Sugar and Sweets	Sweets
Fats, Oils and Cream	Fats
Mixed Food	Mixed Food
Soups and Sauces	Soupsauce
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variations in the number of meals consumed from the home food supply. It is noted, for example, that members of optimal-diet households averaged 2.23 meals at home per day compared to 2.13 home source meals for members of the inadequate-diet households. On a per person basis, therefore, one would expect the corresponding intakes to result in greater quantities among optimal diets even if servings were no larger than those consumed in inadequate-diet households.

To illustrate, suppose that the optimal-diet class and the inadequate-diet class each contained 100 persons and the per person per day intakes of a food were 156 grams for optimal diets and 149 grams for inadequate diets. Since the optimal-diet amount represents more meals at home, it follows that there is no difference in the portions consumed per meal. Each diet class averaged 70 grams per meal as shown:

	(a) Number of Persons	(b) Number of Meals	(c) Quantity Per Person Per Day (Grams)	(d) Quantity Per Meal (Grams)
Optimal Diet	100	223	156	70
Inadequate Diet	100	213	149	70

(Formula: $d = ac/b$)

In order to eliminate differences due to variations in home source eating, the quantities shown in this report are the averages per meal. These averages result from dividing the total gram intakes for the diet class by the total number of meals consumed by household members and guests in the diet class. If desired, the per person per day home source intakes

variations in the number of meals consumed from the home food supply. It is noted, for example, that members of optimal-diet households averaged 2.23 meals at home per day compared to 2.12 home source meals for members of the inadequate-diet households. On a per person basis, therefore, one would expect the corresponding intakes to result in greater quantities among optimal diets even if servings were no larger than those consumed in inadequate-diet households.

To illustrate, suppose that the optimal-diet class and the inadequate-diet class each contained 100 persons and the per person per day intakes of a food were 186 grams for optimal diets and 149 grams for inadequate diets. Since the optimal-diet member respondents were meals at home, it follows that there is no difference in the portions consumed per meal. Each diet class averaged 70 grams per meal as shown:

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may be estimated by multiplying the per meal intakes by the following factors: Optimal Diets, 2.23; Adequate Diets, 2.24; Inadequate Diets, 2.14; Total Diets, 2.21.

It should be noted that the numerators for these per meal gram amounts are total gram intakes for meals and snacks from the home source and the denominators are counts of A.M., Noon and P.M. meals from the home source. Actual per meal intakes are therefore overstated to the extent that foods were consumed as snacks.

Caloric and Nutrient Intakes

The caloric and nutrient intakes in this report, like quantities of food, are averages per meal. The rationale supporting the per meal expression of intakes has been stated. If per person per day home source intakes are desired, the factors previously given are applicable (see above).

Again, it should be noted that intakes include foods consumed as snacks so that per meal caloric and nutrient values are overstated to the extent that the ingested amounts resulted from snacks.

Certain limitations in the nutrient data should also be noted. That is, that the amount of a nutrient contained in a food is not known in all cases. For example, the food composition table used shows that the amount of vitamin C (ascorbic acid) contained in a 100 gram edible portion of fried chicken is not known but is believed to be present in a measurable amount (4). In the nutrient conversions, a value of 0.0 was necessarily imputed in this case. Where foods contained unmeasured trace amounts of a nutrient, values of 0.0 were also imputed.

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III. FINDINGS

The data which follow are detailed according to the quality of diet ratings previously defined. These data are based on a sample of 1,160 household diets of which 300 were rated optimal, 546 were rated adequate, and 314 were rated inadequate.

Eating Pattern and Quality of Diet

Survey respondents were asked to specify the eating patterns of household members and guests for the day of the dietary recall. Table 1 (Section IV) shows the results of this inquiry according to quality of the household diet.

Altogether the 4,051 members and guests of the responding households consumed 3412 A.M. meals, 1974 noon meals and 3572 P.M. meals from the home source for a average of 2.21 meals per person per day. For the three ingestion periods combined, 21 percent of the meals were eaten from other than the home source while 4 percent of the potential meals were skipped. About 7 percent of the population did not eat the A.M. meal, 4 percent did not eat the noon meal, only 1 percent skipped the P.M. meal. Approximately 45 percent ate the noon meal from other than the home source. Snacks from the home food supply were consumed by 52 percent of the population while about 36 percent reportedly did not snack during the day of recall.

For all ingestion periods including snacks, individuals in optimal-diet households ate more often than other individuals. Among

III. FINDINGS

The data which follow are detailed according to the quality of diet ratings previously defined. These data are based on a sample of 1,450 household diets of which 300 were rated optimal, 546 were rated adequate, and 604 were rated inadequate.

Eating Pattern and Quality of Diet

Survey respondents were asked to specify the eating patterns of household members and guests for the day of the dietary recall. Table 1 (Section IV) shows the results of this inquiry according to quality of the household diet.

Altogether the 6,251 members and guests of the responding households consumed 3412 A.M. meals, 1974 noon meals and 3577 P.M. meals from the home source for a average of 2.21 meals per person per day. For the three ingestion periods combined, 21 percent of the meals were eaten from other than the home source while 6 percent of the potential meals were skipped. About 7 percent of the population did not eat the A.M. meal, 4 percent did not eat the noon meal, only 1 percent skipped the P.M. meal. Approximately 45 percent ate the noon meal from other than the home source. Snacks from the home food supply were consumed by 52 percent of the population while about 36 percent reportedly did not snack during the day of recall.

For all ingestion periods including snacks, meals/snacks in optimal-diet households are more often from other than other inadequate. Among

individuals of inadequate-diet households, 11 percent did not eat an A.M. meal, 8 percent did not eat a noon meal, 2 percent did not eat a P.M. meal and nearly half reportedly did not snack during the day of recall.

Frequency of Food Selections and Quality of Diet

The first column of figures in Tables 2-5 (Section IV) shows the average weekly frequency of selecting foods from each of 21 food groups. As expected, households with inadequate diets (Table 5) made the fewest selections from almost all food groups and households with adequate diets (Table 4) generally made fewer selections than households with optimal diets (Table 3).

Uses of dairy products dropped considerably as nutritional achievement decreased. Inadequate diets included dairy products 39 percent less often than optimal diets. For all meat, poultry and fish items combined, optimal diets averaged 15 uses per week compared to 12 uses for both adequate and inadequate diets. Differences between the latter two diets were primarily in more frequent inclusion of pork items in the adequate diets and more frequent use of sausage and luncheon meat items in the inadequate diets.

Combining all fruit and vegetable selections, including juices, uses averaged 33 per week for optimal diets compared to 26 for adequate diets and 14 for inadequate diets. Inadequate diets included fruits and vegetables 45 percent less often than adequate diets and 57 percent less often than optimal diets.

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Combining all fruit and vegetable selections, including juices, uses averaged 33 per week for optimal diets compared to 28 for adequate diets and 19 for inadequate diets. Inadequate diets included fruits and vegetables 45 percent less often than adequate diets and 57 percent less often than optimal diets.

Quantities of Food and Quality of Diet

The second column of figures in Tables 2-5 shows the average quantities of foods consumed from the home food supply. Quantities are the measured intakes expressed as the average gram amounts per meal. The approximate weight in ounces may be obtained by dividing the number of grams by 28.

Generally, as expected, foods were less abundant in household diets which were rated inadequate than in diets which were rated optimal. However, inadequate diets included more fish and shellfish and more soups and sauces on the average. Little difference was observed between optimal and inadequate diets in the consumption of poultry or foods classified as sausage and luncheon meats and differentials for sweets and condiments were moderate.

For all remaining food groups, quantity differentials between optimal and inadequate diets were high. Inadequate diets averaged 56 percent less grams of dairy products. Total meat, poultry and fish consumption averaged 77 grams per meal (approximately 2.8 ounces) among optimal diets compared to 48 grams (1.7 ounces) among inadequate diets. Beef and pork items were much less abundant in the inadequate diets.

For all fruits and vegetables combined, including juices, optimal diets averaged 170 grams (about 6 ounces) per meal compared to 59 grams (2 ounces) among inadequate diets. High vitamin A fruits and vegetables represented the greatest differential followed by potatoes, citrus fruits and tomatoes and other fruits and vegetables.

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For all fruits and vegetables combined, including juices, optimal diets averaged 170 grams (about 6 ounces) per meal, compared to 39 grams (2 ounces) among inadequate diets. High vitamin A fruits and vegetables represented the greatest differential followed by potatoes, citrus fruits and tomatoes and other fruits and vegetables.

Compared to diets that were rated "adequate," inadequate diets included 41% less dairy products, 24% less beef, half as much of the fruits, vegetables, and mixed foods. On the other hand, inadequate diets averaged greater amounts of sausage and luncheon meats, fish and shellfish, legumes, sugar and sweets, and soups and sauces.

Caloric and Nutrient Intakes and Quality of Diet

On the basis of the food composition tables of USDA Handbook Number 8 (4) and the Tulane Dietant (5), foods reported by North Carolina households contained calories and nutrients in the per meal amounts shown in Tables 2-5. The total household population averaged 762 calories per meal from the home food supply. Meat, poultry and fish selections accounted for 22 percent of the home source calories, 43 percent of the protein, 46 percent of the preformed niacin, a third of the iron and one-fourth of the thiamine and riboflavin ingested from the home food supply. Flour and cereal products contributed substantially to the caloric, protein, iron and B-vitamin intakes and supplied 21 percent of the calcium. Dairy products supplied half of the calcium ingested and nearly a third of the riboflavin. About 43 percent of the vitamin A value and 89 percent of the vitamin C were supplied by fruits and vegetables.

Wide variation is observed in the caloric and nutritive values of optimal and inadequate diets. The latter included 41 percent fewer calories and from 42 to 68 percent less of the eight nutrients studied. Differences between "inadequate" and "adequate" diets were high for vitamin C, vitamin A value and calcium but were moderate for the other nutrients.

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Wide variation is observed in the calorie and nutritive values of optimal and inadequate diets. The latter included 41 percent fewer calories and from 42 to 65 percent less of the eight nutrients studied. Differences between "inadequate" and "adequate" diets were high for vitamin C, vitamin A value and calcium but were moderate for the other nutrients.

The total caloric and nutrient intakes for households of different diet classes are summarized below.

Nutrient	All Diet Classes	Optimal Diets	Adequate Diets	Inadequate Diets
	AMOUNTS PER MEAL			
Calories	762.6	1027.7	707.2	603.5
Protein (gm)	29.4	40.2	27.1	23.2
Calcium (mg)	268.7	366.3	263.0	183.8
Iron (mg)	4.9	7.0	4.3	3.8
Vitamin A value (IU)	1746.8	2838.1	1611.8	918.4
Thiamine (mg)	0.5	0.8	0.4	0.3
Riboflavin (mg)	0.6	0.9	0.5	0.4
Preformed Niacin (mg)	6.0	8.2	5.6	4.7
Vitamin C (mg)	26.9	41.7	26.3	13.5
NUMBER OF MEALS	8958	2325	4267	2366

Protein Adequacy and Quality of Diet

Although survey findings show that low protein intakes were relatively infrequent, sources of protein are a concern for reasons of the amino acids needed for growth; the protein supplied by foods of animal origin contain the eight essential amino acids. Also relevant to the nutritional adequacy of a diet is the contribution of protein to total caloric intake.

Table 6 shows survey findings for the amount and percent of protein derived from foods of animal origin and the number and percent of calories contributed by total protein. The percentages vary only slightly; however, compared to optimal diets, inadequate diets included 43 percent fewer grams of animal protein and 42 percent less calories from total protein.

The total calorie and nutrient intakes for households of different diet classes are summarized below.

Nutrient	All DMs Classes	Optimal Diets	Adequate Diets	Inadequate Diets
		AMOUNTS PER MEAL		
Calories	702.6	1827.7	707.2	605.5
Protein (gm)	29.4	90.2	27.1	23.2
Calcium (mg)	268.7	324.3	293.0	183.8
Iron (mg)	4.3	7.0	4.3	3.8
Vitamin A value (IU)	1746.8	2839.1	1577.8	918.4
Thiamine (mg)	0.5	0.6	0.4	0.3
Riboflavin (mg)	0.6	0.9	0.5	0.4
Preformed Niacin (mg)	6.0	8.2	5.6	4.7
Vitamin C (mg)	26.9	41.7	26.3	13.5
NUMBER OF MEALS	9958	2325	4822	2365

Protein Adequacy and Quality of Diet

Although survey findings show that low protein intakes were relatively infrequent, sources of protein are a concern for reasons of the amino acids needed for growth, the protein supplied by foods of animal origin contain the eight essential amino acids. Also relevant to the nutritional adequacy of a diet is the contribution of protein to total calorie intake.

Table 6 shows survey findings for the amount and percent of protein derived from foods of animal origin and the number and percent of calories contributed by total protein. The percentages vary only slightly; however, compared to optimal diets, inadequate diets included 45 percent fewer grams of animal protein and 42 percent less calories from total protein

IV. TABLES

TABLE 1

NUMBER AND PERCENTAGE OF MEALS AND SNACKS
BY SOURCE OF INTAKE AND QUALITY OF DIET
NORTH CAROLINA NUTRITION SURVEY HOUSEHOLDS, 1970

INGESTION PERIOD AND QUALITY OF DIET	SOURCE OF MEALS AND SNACKS: Home Source No.	Home Source %	Other Source No.	Other Source %	Did Not Eat No.	Did Not Eat %	Unknown No.	Unknown %	Total No.	Total %
A.M.										
TOTAL	3,412	84.2	309	7.6	266	6.6	64	1.6	4,051	100.0
Optimal	885	84.9	89	8.5	47	4.5	22	2.1	1,043	100.0
Adequate	1,628	85.5	142	7.5	100	5.3	33	1.7	1,903	100.0
Inadequate	899	81.4	78	7.1	119	10.8	9	0.8	1,105	100.0
NOON										
TOTAL	1,974	48.7	1,834	45.3	176	4.3	67	1.7	4,051	100.0
Optimal	516	49.5	475	45.5	28	2.7	24	2.3	1,043	100.0
Adequate	960	50.4	851	44.7	61	3.2	31	1.6	1,903	100.0
Inadequate	498	45.1	508	46.0	87	7.9	12	1.1	1,105	100.0
P.M.										
TOTAL	3,572	88.2	375	9.3	40	1.0	64	1.6	4,051	100.0
Optimal	924	88.6	88	8.4	3	0.3	28	2.7	1,043	100.0
Adequate	1,679	88.2	183	9.6	19	1.0	22	1.2	1,903	100.0
Inadequate	969	87.7	104	9.4	18	1.6	14	1.3	1,105	100.0
A.M., NOON & P.M.										
TOTAL	8,958	73.7	2,518	20.7	482	4.0	195	1.6	12,153	100.0
Optimal	2,325	74.3	652	20.8	78	2.5	74	2.4	3,129	100.0
Adequate	4,267	74.7	1,176	20.6	180	3.2	86	1.5	5,709	100.0
Inadequate	2,366	71.4	690	20.8	224	6.8	35	1.1	3,315	100.0

PUBLIC HEALTH STATISTICS

TABLE 1

NUMBER AND PERCENTAGE OF MEALS AND SNACKS
BY SOURCE OF INTAKE AND QUALITY OF DIET,
NORTH CAROLINA NUTRITION SURVEY HOUSEHOLDS, 1970

INGESTION PERIOD AND QUALITY OF DIET	SOURCE OF MEALS AND SNACKS: Home Source No.	%	Other Source No.	%	Eat Out Out No.	%	Unknown No.	%	Total No.	%
A.M.										
TOTAL	3,415	44.2	303	7.9	264	6.9	84	1.4	4,057	100.0
Optimal	885	34.9	83	2.6	47	2.6	22	2.1	1,043	100.0
Adequate	1,628	36.6	146	4.2	100	4.8	13	1.7	1,903	100.0
Inadequate	899	61.4	75	4.1	115	20.6	7	0.8	1,105	100.0
NOON										
TOTAL	1,374	44.7	1,834	44.5	176	4.3	67	1.7	4,051	100.0
Optimal	516	40.3	475	46.4	28	2.7	24	2.3	1,043	100.0
Adequate	860	46.4	861	45.7	61	3.2	31	1.6	1,903	100.0
Inadequate	498	46.1	506	48.2	57	5.4	12	1.1	1,105	100.0
P.M.										
TOTAL	3,324	44.4	375	9.4	40	1.0	64	1.6	4,021	100.0
Optimal	924	47.0	86	4.4	3	0.3	28	2.7	1,043	100.0
Adequate	1,613	47.3	183	3.6	13	1.0	22	1.3	1,903	100.0
Inadequate	563	47.7	109	9.4	18	1.6	14	1.2	1,105	100.0
A.M., NOON & P.M.										
TOTAL	2,358	72.7	3,518	30.7	482	4.0	195	1.6	12,153	100.0
Optimal	2,025	74.3	642	20.8	78	2.4	14	2.4	3,129	100.0
Adequate	4,047	72.7	1,176	12.6	180	2.2	34	1.4	5,709	100.0
Inadequate	2,361	71.4	650	20.8	224	6.4	35	1.1	3,315	100.0

TABLE 1 (continued)

NUMBER AND PERCENTAGE OF MEALS AND SNACKS
BY SOURCE OF INTAKE AND QUALITY OF DIET
NORTH CAROLINA NUTRITION SURVEY HOUSEHOLDS, 1970

INGESTION PERIOD AND QUALITY OF DIET	SOURCE OF MEALS AND SNACKS: Home Source No.	Home Source %	Other Source No.	Other Source %	Did Not Eat No.	Did Not Eat %	Unknown No.	Unknown %	Total No.	Total %
SNACKS										
TOTAL	2,105	*52.0*	250	*6.2*	1,441	*35.6*	255	*6.3*	4,051	*100.0*
Optimal	638	*61.2*	81	*7.8*	272	*26.1*	52	*5.0*	1,043	*100.0*
Adequate	1,040	*54.7*	103	*5.4*	636	*33.4*	124	*6.5*	1,903	*100.0*
Inadequate	427	*38.6*	66	*6.0*	533	*48.2*	79	*7.1*	1,105	*100.0*

PUBLIC HEALTH STATISTICS

TABLE 1 (continued)

NUMBER AND PERCENTAGE OF MEALS AND SNACKS
BY SOURCE OF INTAKE AND QUALITY OF DIET
NORTH CAROLINA NUTRITION SURVEY HOUSEHOLDS, 1970

INGESTION PERIOD AND QUALITY OF DIET	SOURCE OF MEALS AND SNACKS											
	Home Source		Other Source		Old Age Est.		Unknown		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
SNACKS												
TOTAL	2,105	32.0	730	4.3	1,441	20.7	255	4.4	4,051	100.0
Optimal	438	21.0	81	4.4	272	36.1	52	5.0	1,043	100.0
Adequate	1,040	44.7	103	4.4	536	32.4	149	4.4	2,323	100.0
Inadequate	627	34.6	66	4.0	513	49.7	72	7.2	1,185	100.0

TABLE 2

AVERAGE WEEKLY FREQUENCY OF USE AND PER MEAL INTAKES

ACCORDING TO FOOD GROUP AND QUALITY OF DIET:

NCNS HOUSEHOLDS, TOTAL DIETS

		PER MEAL INTAKES									
FOOD GROUP	USES*	GRAMS	CALORIES	PROTEIN (GM)	CALCIUM (MG)	IRON (MG)	VIT A (IU)	THIA-MINE (MG)	RIBO-FLAVIN (MG)	NIACIN (MG)	VIT C (MG)
DAIRY PROD	18.6	101.710	80.309	4.135	137.227	0.049	163.671	0.075	0.191	0.112	0.999
BEEF	3.3	19.917	65.794	4.795	2.781	0.645	223.242	0.015	0.054	0.961	0.162
PORK	2.7	12.953	41.864	2.918	1.318	0.407	17.997	0.066	0.033	0.601	0.032
VEAL & LAM	0.1	0.496	1.220	0.134	0.057	0.016	0.000	0.000	0.001	0.030	0.000
SAUSAGE	3.3	8.056	30.795	1.235	0.564	0.343	3.184	0.035	0.021	0.246	0.004
FISH&SHELL	1.0	5.131	10.252	0.990	2.079	0.062	3.208	0.003	0.005	0.166	0.016
POULTRY	2.5	8.861	20.463	2.503	1.218	0.174	46.906	0.005	0.031	0.797	0.045
EGGS	6.2	19.197	35.454	2.337	13.561	0.380	229.009	0.016	0.054	0.019	0.004
LEGUMES	3.7	18.809	26.788	1.550	7.489	0.425	9.417	0.025	0.011	0.289	0.378
FRT&TOMAT	6.9	36.671	15.616	0.250	4.230	0.104	101.959	0.023	0.007	0.126	13.429
HI A F&V	2.5	11.777	7.662	0.210	8.581	0.093	519.456	0.006	0.011	0.073	3.453
POTATOES	4.1	24.806	32.834	0.652	3.960	0.185	10.989	0.024	0.011	0.399	3.611
OTH FR&VEG	10.9	39.878	22.922	0.545	8.574	0.275	121.303	0.019	0.017	0.177	3.439
FLOUR CERE	24.5	61.403	139.844	3.916	36.763	0.977	30.374	0.117	0.082	1.048	0.130
S-R FLOUR	2.1	10.025	37.291	0.712	20.955	0.170	0.000	0.022	0.022	0.210	0.000
DESSERTS	6.0	13.948	46.335	0.608	6.328	0.123	22.544	0.006	0.011	0.063	0.162
SWEETS	18.6	58.615	50.618	0.093	1.865	0.077	6.391	0.001	0.003	0.034	0.238
FATS	16.3	8.769	58.642	0.641	1.453	0.073	89.135	0.012	0.007	0.107	0.008
MIXED FOOD	1.6	12.647	19.116	0.932	5.405	0.156	56.940	0.009	0.013	0.210	0.520
SOUP&SAUCE	2.5	16.453	14.222	0.263	1.725	0.047	82.347	0.002	0.003	0.048	0.145
CONDIMENTS	16.3	165.493	4.563	0.027	2.548	0.119	8.871	0.000	0.007	0.330	0.125
ALL FOOD	153.8	655.615	762.603	29.444	268.679	4.899	1746.750	0.482	0.595	6.047	26.901

* AVERAGE WEEKLY HOUSEHOLD FREQUENCY OF USING ITEMS FROM THE FOOD GROUP

PUBLIC HEALTH STATISTICS

TABLE 3

VARIATION BETWEEN FREQUENCY OF USE AND THE BEST INTERVAL

FIRST 10 WORDS WHEN GOOD GROUP AND QUALITY OF DIGIT

According to Good Group Sense Horsebrook Start Digit

Good Group	Digit	Sense Horsebrook	Start Digit	Correct Digit	Frequency	% Use	Time Interval	Length Digit	Digit Sense
1	3	1	3	3	1	0.000	0.000	0.000	0.000
	1	2	1	1	1	0.000	0.000	0.000	0.000
	4	3	4	4	1	0.000	0.000	0.000	0.000
	1	4	1	1	1	0.000	0.000	0.000	0.000
	5	5	5	5	1	0.000	0.000	0.000	0.000
	9	6	9	9	1	0.000	0.000	0.000	0.000
	2	7	2	2	1	0.000	0.000	0.000	0.000
	6	8	6	6	1	0.000	0.000	0.000	0.000
	7	9	7	7	1	0.000	0.000	0.000	0.000
	8	10	8	8	1	0.000	0.000	0.000	0.000
	0	11	0	0	1	0.000	0.000	0.000	0.000
	3	12	3	3	1	0.000	0.000	0.000	0.000
	1	13	1	1	1	0.000	0.000	0.000	0.000
	4	14	4	4	1	0.000	0.000	0.000	0.000
	1	15	1	1	1	0.000	0.000	0.000	0.000
	5	16	5	5	1	0.000	0.000	0.000	0.000
	9	17	9	9	1	0.000	0.000	0.000	0.000
	2	18	2	2	1	0.000	0.000	0.000	0.000
	6	19	6	6	1	0.000	0.000	0.000	0.000
	7	20	7	7	1	0.000	0.000	0.000	0.000
	8	21	8	8	1	0.000	0.000	0.000	0.000
	0	22	0	0	1	0.000	0.000	0.000	0.000
	3	23	3	3	1	0.000	0.000	0.000	0.000
	1	24	1	1	1	0.000	0.000	0.000	0.000
	4	25	4	4	1	0.000	0.000	0.000	0.000
	1	26	1	1	1	0.000	0.000	0.000	0.000
	5	27	5	5	1	0.000	0.000	0.000	0.000
	9	28	9	9	1	0.000	0.000	0.000	0.000
	2	29	2	2	1	0.000	0.000	0.000	0.000
	6	30	6	6	1	0.000	0.000	0.000	0.000
	7	31	7	7	1	0.000	0.000	0.000	0.000
	8	32	8	8	1	0.000	0.000	0.000	0.000
	0	33	0	0	1	0.000	0.000	0.000	0.000
	3	34	3	3	1	0.000	0.000	0.000	0.000
	1	35	1	1	1	0.000	0.000	0.000	0.000
	4	36	4	4	1	0.000	0.000	0.000	0.000
	1	37	1	1	1	0.000	0.000	0.000	0.000
	5	38	5	5	1	0.000	0.000	0.000	0.000
	9	39	9	9	1	0.000	0.000	0.000	0.000
	2	40	2	2	1	0.000	0.000	0.000	0.000
	6	41	6	6	1	0.000	0.000	0.000	0.000
	7	42	7	7	1	0.000	0.000	0.000	0.000
	8	43	8	8	1	0.000	0.000	0.000	0.000
	0	44	0	0	1	0.000	0.000	0.000	0.000
	3	45	3	3	1	0.000	0.000	0.000	0.000
	1	46	1	1	1	0.000	0.000	0.000	0.000
	4	47	4	4	1	0.000	0.000	0.000	0.000
	1	48	1	1	1	0.000	0.000	0.000	0.000
	5	49	5	5	1	0.000	0.000	0.000	0.000
	9	50	9	9	1	0.000	0.000	0.000	0.000
	2	51	2	2	1	0.000	0.000	0.000	0.000
	6	52	6	6	1	0.000	0.000	0.000	0.000
	7	53	7	7	1	0.000	0.000	0.000	0.000
	8	54	8	8	1	0.000	0.000	0.000	0.000
	0	55	0	0	1	0.000	0.000	0.000	0.000
	3	56	3	3	1	0.000	0.000	0.000	0.000
	1	57	1	1	1	0.000	0.000	0.000	0.000
	4	58	4	4	1	0.000	0.000	0.000	0.000
	1	59	1	1	1	0.000	0.000	0.000	0.000
	5	60	5	5	1	0.000	0.000	0.000	0.000
	9	61	9	9	1	0.000	0.000	0.000	0.000
	2	62	2	2	1	0.000	0.000	0.000	0.000
	6	63	6	6	1	0.000	0.000	0.000	0.000
	7	64	7	7	1	0.000	0.000	0.000	0.000
	8	65	8	8	1	0.000	0.000	0.000	0.000
	0	66	0	0	1	0.000	0.000	0.000	0.000
	3	67	3	3	1	0.000	0.000	0.000	0.000
	1	68	1	1	1	0.000	0.000	0.000	0.000
	4	69	4	4	1	0.000	0.000	0.000	0.000
	1	70	1	1	1	0.000	0.000	0.000	0.000
	5	71	5	5	1	0.000	0.000	0.000	0.000
	9	72	9	9	1	0.000	0.000	0.000	0.000
	2	73	2	2	1	0.000	0.000	0.000	0.000
	6	74	6	6	1	0.000	0.000	0.000	0.000
	7	75	7	7	1	0.000	0.000	0.000	0.000
	8	76	8	8	1	0.000	0.000	0.000	0.000
	0	77	0	0	1	0.000	0.000	0.000	0.000
	3	78	3	3	1	0.000	0.000	0.000	0.000
	1	79	1	1	1	0.000	0.000	0.000	0.000
	4	80	4	4	1	0.000	0.000	0.000	0.000
	1	81	1	1	1	0.000	0.000	0.000	0.000
	5	82	5	5	1	0.000	0.000	0.000	0.000
	9	83	9	9	1	0.000	0.000	0.000	0.000
	2	84	2	2	1	0.000	0.000	0.000	0.000
	6	85	6	6	1	0.000	0.000	0.000	0.000
	7	86	7	7	1	0.000	0.000	0.000	0.000
	8	87	8	8	1	0.000	0.000	0.000	0.000
	0	88	0	0	1	0.000	0.000	0.000	0.000
	3	89	3	3	1	0.000	0.000	0.000	0.000
	1	90	1	1	1	0.000	0.000	0.000	0.000
	4	91	4	4	1	0.000	0.000	0.000	0.000
	1	92	1	1	1	0.000	0.000	0.000	0.000
	5	93	5	5	1	0.000	0.000	0.000	0.000
	9	94	9	9	1	0.000	0.000	0.000	0.000
	2	95	2	2	1	0.000	0.000	0.000	0.000
	6	96	6	6	1	0.000	0.000	0.000	0.000
	7	97	7	7	1	0.000	0.000	0.000	0.000
	8	98	8	8	1	0.000	0.000	0.000	0.000
	0	99	0	0	1	0.000	0.000	0.000	0.000
	3	100	3	3	1	0.000	0.000	0.000	0.000

TABLE 3

AVERAGE WEEKLY FREQUENCY OF USE AND PER MEAL INTAKES

ACCORDING TO FOOD GROUP AND QUALITY OF DIET:

NCNS HOUSEHOLDS, OPTIMAL DIETS

		PER MEAL INTAKES									
FOOD GROUP	USES*	GRAMS	CALORIES	PROTEIN (GM)	CALCIUM (MG)	IRON (MG)	VIT A (IU)	THIA-MINE (MG)	RIBO-FLAVIN (MG)	NIACIN (MG)	VIT C (MG)
DAIRY PROD	22.2	139.689	108.583	5.436	180.304	0.055	220.913	0.208	0.273	0.153	1.335
BEEF	4.1	32.056	110.851	7.595	4.913	1.051	571.596	0.025	0.102	1.554	0.413
PORK	3.4	21.065	67.706	4.803	2.180	0.717	55.152	0.109	0.062	1.026	0.081
VEAL & LAM	0.1	1.363	3.201	0.377	0.161	0.047	0.000	0.001	0.004	0.085	0.000
SAUSAGE	3.7	9.442	36.647	1.483	0.696	0.520	3.655	0.042	0.024	0.290	0.007
FISH&SHELL	0.8	4.220	8.093	0.791	1.542	0.043	1.321	0.003	0.004	0.137	0.001
POULTRY	2.6	9.054	20.019	2.604	1.127	0.209	76.023	0.006	0.042	0.827	0.036
EGGS	7.2	24.762	45.142	3.006	17.322	0.490	292.482	0.021	0.070	0.024	0.009
LEGUMES	4.7	27.245	36.873	2.151	10.365	0.593	15.723	0.035	0.016	0.380	0.584
FRT&TOMAT	10.1	56.346	23.273	0.431	7.319	0.184	184.948	0.039	0.012	0.220	21.298
HI A F&V	3.8	19.510	12.794	0.332	13.523	0.147	824.214	0.010	0.018	0.115	5.362
POTATOES	4.9	36.936	44.920	0.942	6.016	0.263	18.342	0.035	0.016	0.564	5.348
OTH FR&VEG	13.9	57.109	34.154	0.806	12.827	0.427	179.236	0.030	0.027	0.262	5.181
FLOUR CERE	26.5	75.666	169.863	4.763	46.310	1.143	43.518	0.136	0.099	1.216	0.196
S-R FLOUR	3.0	16.971	63.130	1.205	35.470	0.288	0.000	0.037	0.037	0.356	0.000
DESSERTS	7.4	18.837	62.146	0.830	9.652	0.141	35.899	0.007	0.016	0.075	0.171
SWEETS	20.5	65.149	58.631	0.115	2.637	0.182	21.844	0.001	0.007	0.077	0.455
FATS	19.5	11.472	74.871	0.824	1.897	0.095	120.488	0.016	0.009	0.138	0.010
MIXED FOOD	1.9	19.647	26.786	1.446	8.011	0.253	103.253	0.014	0.020	0.316	0.828
SOUP&SAUCE	2.3	12.691	14.781	0.221	1.145	0.039	53.316	0.001	0.002	0.032	0.169
CONDIMENTS	17.3	174.672	5.275	0.042	2.876	0.132	20.525	0.001	0.007	0.358	0.258
ALL FOOD	179.8	833.902	1027.738	40.203	366.292	7.020	2838.091	0.777	0.866	8.204	41.742

* AVERAGE WEEKLY HOUSEHOLD FREQUENCY OF USING ITEMS FROM THE FOOD GROUP

PUBLIC HEALTH STATISTICS

TABLE 4

AVERAGE WEEKLY FREQUENCY OF USE AND PER MEAL INTAKES

ACCORDING TO FOOD GROUP AND QUALITY OF DIET:

NCNS HOUSEHOLDS, ADEQUATE DIETS

		PER MEAL INTAKES									
FOOD GROUP	USES*	GRAMS	CALORIES	PROTEIN (GM)	CALCIUM (MG)	IRON (MG)	VIT A (IU)	THIA-MINE (MG)	RIBO-FLAVIN (MG)	NIACIN (MG)	VIT C (MG)
DAIRY PROD	19.6	103.760	83.955	4.321	143.717	0.056	174.472	0.033	0.191	0.115	1.033
BEEF	3.1	16.954	54.062	4.154	2.272	0.549	125.077	0.012	0.042	0.818	0.095
PORK	2.8	10.729	34.220	2.411	1.092	0.312	0.000	0.054	0.023	0.476	0.011
VEAL & LAM	0.0	0.082	0.206	0.021	0.009	0.002	0.000	0.000	0.000	0.004	0.000
SAUSAGE	2.7	6.486	24.110	0.966	0.451	0.322	2.552	0.025	0.016	0.191	0.004
FISH&SHELL	1.0	4.739	9.239	0.936	1.740	0.050	4.084	0.003	0.004	0.182	0.021
POULTRY	2.7	8.864	21.177	2.564	1.168	0.171	44.856	0.005	0.029	0.826	0.040
EGGS	6.1	17.390	32.416	2.125	12.282	0.346	209.043	0.015	0.049	0.017	0.004
LEGUMES	3.4	13.565	20.777	1.187	5.320	0.299	6.551	0.020	0.008	0.263	0.323
FRT&TOMAT	7.3	35.153	15.073	0.230	3.966	0.095	93.503	0.021	0.007	0.116	12.716
HI A F&V	2.7	11.596	6.697	0.215	9.297	0.096	564.952	0.006	0.011	0.072	3.646
POTATOES	4.4	25.215	34.177	0.670	4.103	0.190	10.703	0.024	0.011	0.413	3.691
OTH FR&VEG	11.4	40.543	22.454	0.515	8.630	0.256	108.195	0.018	0.016	0.167	3.411
FLOUR CERE	24.4	55.579	132.988	3.712	34.188	0.943	27.585	0.113	0.078	1.042	0.137
S-R FLOUR	1.8	7.818	29.084	0.555	16.340	0.133	0.000	0.017	0.017	0.164	0.000
DESSERTS	6.1	13.006	40.564	0.538	5.111	0.096	18.629	0.005	0.009	0.053	0.185
SWEETS	18.9	51.745	46.697	0.099	1.656	0.044	1.078	0.001	0.002	0.023	0.179
FATS	17.0	8.975	59.803	0.650	1.576	0.073	88.552	0.012	0.008	0.107	0.009
MIXED FOOD	1.7	12.288	19.367	0.888	5.245	0.142	52.097	0.009	0.013	0.220	0.540
SOUP&SAUCE	2.6	16.284	14.918	0.277	2.254	0.046	75.258	0.002	0.004	0.046	0.166
CONDIMENTS	16.8	166.430	5.241	0.028	2.554	0.117	6.155	0.000	0.007	0.329	0.101
ALL FOOD	156.5	627.203	707.222	27.063	262.970	4.340	1611.823	0.397	0.547	5.644	26.312

* AVERAGE WEEKLY HOUSEHOLD FREQUENCY OF USING ITEMS FROM THE FOOD GROUP

PUBLIC HEALTH STATISTICS

TABLE 4

AVERAGE WEEKLY FREQUENCY OF USE AND PER MEAL INTAKES

ACCORDING TO FOOD GROUP AND QUALITY OF DIET:

ROCAS HOUSEHOLDS, ADEQUATE DIETS

PER MEAL INTAKES

FOOD GROUP	BASES*	GRAMS (GR)	CALORIES (KCAL)	PROTEIN (GR)	CALCIUM (MG)	IRON (MG)	VIT A (IU)	THIA-MINE (MG)	RIBO-FLAVIN (MG)	NIACIN (MG)	VIT C (MG)
DAIRY FOOD	19.6	101.760	83.955	4.321	143.777	0.054	474.472	0.033	0.191	0.145	3.033
MEAT	3.1	14.959	54.062	4.154	2.272	0.349	233.007	0.042	0.042	0.478	0.007
EGGS	2.8	10.729	16.220	2.417	1.072	0.172	0.000	0.054	0.021	0.076	0.011
FISH & LEAN	0.0	0.042	0.205	0.021	0.007	0.000	0.000	0.000	0.000	0.000	0.000
SAUSAGE	2.1	6.485	24.110	0.404	0.451	0.122	2.342	0.025	0.010	0.171	0.006
FISH&SHELL	1.0	4.723	9.239	0.414	1.740	0.039	0.088	0.008	0.000	0.182	0.027
POULTRY	2.7	6.864	24.177	2.534	1.163	0.177	84.036	0.005	0.029	0.824	0.040
PEAS	6.1	17.240	32.436	2.124	12.282	0.134	209.043	0.245	0.084	0.017	0.008
LEGUMES	3.6	13.585	20.777	1.187	5.120	0.249	6.351	0.224	0.008	3.083	0.324
PROTOMAIZ	7.3	45.151	75.073	0.234	2.464	0.095	33.405	0.021	0.007	0.116	12.776
OC & MEA	2.1	11.596	6.427	0.213	9.127	0.046	2[illegible].052	0.000	0.011	0.072	3.645
POTATOES	8.6	25.215	34.177	0.470	8.103	0.140	10.103	0.024	0.071	0.813	3.697
OTH VEGETA	11.8	40.564	22.458	0.515	8.830	0.254	108.295	0.018	0.076	0.167	3.411
FRUITS CIT	24.8	55.579	132.008	1.172	34.160	0.943	21.485	0.113	0.075	1.042	0.137
S-A FRUITS	1.4	7.818	29.089	0.655	16.140	0.133	0.000	0.017	0.017	0.166	0.000
BERRIES	8.1	14.059	40.364	0.514	3.111	0.346	18.629	0.005	0.009	0.052	0.185
SWEETS	16.3	51.765	56.097	0.607	4.659	0.044	1.078	0.001	0.002	0.023	0.179
FATS	17.0	4.575	53.004	0.430	1.576	0.073	86.552	0.014	0.004	0.107	0.007
MIXED FOOD	3.7	12.284	19.347	0.484	5.245	0.142	52.097	0.009	0.013	0.220	0.540
SOUPS&JUCE	2.4	16.284	14.918	0.271	2.158	0.044	75.258	0.002	0.004	0.078	0.142
COMPIMENTS	14.4	146.430	5.261	0.024	2.558	0.117	4.155	0.000	0.007	0.312	0.107
ALL FOOD	150.5	627.203	707.222	27.064	262.970	4.340	1011.823	0.347	0.547	5.444	24.372

* AVERAGE WEEKLY HOUSEHOLD FREQUENCY OF USING DRINKS FROM THE FOOD GROUP

TABLE 5

AVERAGE WEEKLY FREQUENCY OF USE AND PER MEAL INTAKES

ACCORDING TO FOOD GROUP AND QUALITY OF DIET:

NCNS HOUSEHOLDS, INADEQUATE DIETS

		PER MEAL INTAKES									
FOOD GROUP	USES*	GRAMS	CALORIES	PROTEIN (GM)	CALCIUM (MG)	IRON (MG)	VIT A (IU)	THIA-MINE (MG)	RIBO-FLAVIN (MG)	NIACIN (MG)	VIT C (MG)
DAIRY PROD	13.6	61.050	46.245	2.533	83.655	0.028	88.587	0.019	0.113	0.066	0.610
BEEF	2.8	13.398	42.911	3.218	1.616	0.420	57.964	0.010	0.030	0.642	0.039
PORK	1.8	9.033	30.377	1.991	0.884	0.278	14.024	0.044	0.023	0.410	0.021
VEAL & LAM	0.1	0.392	1.105	0.099	0.042	0.011	0.000	0.000	0.001	0.022	0.000
SAUSAGE	4.0	9.515	37.060	1.474	0.637	0.208	3.857	0.046	0.026	0.303	0.000
FISH&SHELL	1.3	6.721	14.169	1.280	3.207	0.101	3.478	0.004	0.006	0.165	0.023
POULTRY	2.3	8.668	19.616	2.297	1.398	0.146	22.216	0.004	0.022	0.718	0.064
EGGS	5.5	17.012	31.457	2.064	12.185	0.335	202.927	0.015	0.048	0.017	0.000
LEGUMES	3.2	19.977	27.725	1.612	8.568	0.487	8.406	0.024	0.012	0.247	0.277
FRT&TOMAT	3.3	20.227	9.131	0.110	1.693	0.043	36.268	0.011	0.003	0.050	7.041
HI A F&V	0.8	4.570	4.393	0.082	2.487	0.034	137.928	0.003	0.003	0.034	1.250
POTATOES	2.8	12.260	18.661	0.335	1.704	0.099	4.339	0.012	0.005	0.213	1.777
OTH FR&VEG	7.2	21.905	12.819	0.344	4.333	0.160	88.339	0.012	0.009	0.113	1.792
FLOUR CERE	22.7	57.937	122.881	3.455	32.074	0.874	22.564	0.107	0.070	0.898	0.055
S-R FLOUR	1.9	7.209	26.814	0.512	15.077	0.123	0.000	0.016	0.016	0.152	0.000
DESSERTS	4.5	10.873	41.263	0.516	5.268	0.152	16.544	0.005	0.009	0.069	0.113
SWEETS	16.2	64.550	49.830	0.059	1.486	0.034	0.851	0.000	0.001	0.011	0.131
FATS	12.2	5.766	40.757	0.445	0.799	0.051	59.642	0.009	0.005	0.076	0.004
MIXED FOOD	1.0	6.472	11.198	0.510	3.151	0.085	20.502	0.004	0.007	0.091	0.182
SOUP&SAUCE	2.5	20.421	12.431	0.280	1.345	0.058	123.309	0.003	0.003	0.067	0.082
CONDIMENTS	14.6	154.875	2.657	0.010	2.217	0.108	2.383	0.000	0.005	0.306	0.041
ALL FOOD	124.4	532.829	603.499	23.227	183.826	3.833	918.376	0.347	0.417	4.668	13.501

* AVERAGE WEEKLY HOUSEHOLD FREQUENCY OF USING ITEMS FROM THE FOOD GROUP

PUBLIC HEALTH STATISTICS

TABLE 6

PROTEIN FROM ANIMAL SOURCES AND
CALORIES FROM PROTEIN BY QUALITY OF DIET
NORTH CAROLINA NUTRITION SURVEY HOUSEHOLDS, 1970

Quality of Diet	PROTEIN FROM ANIMAL SOURCES*		CALORIES FROM TOTAL PROTEIN	
	Grams Per Meal	Percent of Total Protein	Number Per Meal	Percent of Total Calories
Total	19.0	64.7	117.8	15.4
Optimal	26.1	64.9	160.8	15.6
Adequate	17.5	64.7	108.3	15.3
Inadequate	15.0	64.4	92.9	15.4

*Protein from Dairy Products, Meat, Poultry, Fish and Eggs.
Excludes animal protein contained in foods of other food groups.

PUBLIC HEALTH STATISTICS

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